

REMARKS

Claims 1-15, 18 and 20-38 are currently pending in the subject application, and are presently under consideration. Original claims 1-15, 18 and 20-38 have been rejected. Claims 1, 13, 15, 25, 30 and 37 have been amended. Claims 12, 29 and 36 have been canceled. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

I. Rejection of Claims 1, 25, 26 and 30 under 35 U.S.C. 102(e)

Claims 1, 25, 26 and 30 have been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Pub. No. 2003/0052662 to Bi, et al. (hereinafter, "Bi"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 1 has been amended to substantially incorporate the subject matter of claim 12. Since claim 12 was rejected as being made obvious under 35 U.S.C. §103(a) over Bi taken in view of U.S. Patent 6,701,445 to Majos (hereinafter, "Majos"), Applicant's representative will consider the rejection of claim 12 in responding to the rejection of claim 1. The combination of Bi and Majos fails to teach or suggest the system recited in amended claim 1.

In rejecting claim 12, the Office Action contends that Majos teaches "a frequency comparator 3 that provides a comparison signal (H+ and H-) based [sic] comparing a desired value (frequency of Din) and actual value (frequency of H)." See Office Action, Page 9. The comparator recited in amended claim 1 provides a comparator signal based on a comparison of a value of a frequency for an input signal and a value of a desired frequency. In sharp contrast, the frequency comparison performed by the frequency comparator 3 disclosed in Majos performs a substantially different function from that recited in amended claim 1. First, the inputs to the frequency comparator 3 disclosed in Majos are four clock signals, namely Q1, Q2, Q3 and Q4. See Majos at Col. 6, line 60, through Col. 7, line 20. None of these inputs (Q1, Q2, Q3 and Q4) corresponds to the values of the frequency of the input signal and desired frequency as recited in claim 1. Additionally, the frequency comparator 3 disclosed in Majos analyzes the sense of timing error between the incoming data signal Din and the clock signal H from the oscillator VCO. Majos at Col. 8, lines 9-11. The sense of this error is represented by the states of the logic signal H+ and H-. Majos at Col. 8, lines 11-13. The particular analysis performed by the comparator 3 to ascertain this sense of timing error in Majos is defined by logic equations at Col.

7, lines 59-60, which define results in the truth table also shown in Col. 7 of Majos. The express teachings of Majos demonstrate that the comparator 3 does not provide the logic signal H+ and H- based on a comparison of frequency values. Since the comparator taught by Majos functions in substantially different way from the comparator recited in claim 1, Bi taken in view of Majos fails to teach or suggest the comparator recited in amended claim 1 since the frequency comparator 3 disclosed in Major does not compare frequency values. Moreover, there is not sufficient teaching that can be overcome by

The Office Action further argues that Majos teaches or suggests that the frequency comparator 3 of Majos compares two frequency values. See Office Action, Page 14 in which the Office Action relies on the Table in Col. 7 and Col. 7, lines 5-20. In contrast to the contentions of the Office Action, the comparison disclosed in Majos in Col. 7 is based on a comparison of the states of the input signals Q1, Q2, Q3 and Q4, not a comparison of frequency values, as recited in amended claim 1. Even though the logic signals H+ and H- provided by the comparator 3 provide an indication of the sense of the timing error (i.e., whether the received data signal Din is too fast, too slow or does not required correction), such result does not teach or imply that the comparator compares frequency values in a manner that reads on the comparator of amended claim 1.

Applicant's representative respectfully submits that the Office Action's interpretation of claim 12 (which was substantially incorporated into claim 1) would render the claimed term "value" (of "frequency value") completely superfluous. A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372, 73 U.S.P.Q.2D 1641 (Fed. Cir. 2005). Thus, Applicant's representative respectfully submits that the Office Action's interpretation of "frequency value," as recited in amended claim 1 is contrary to normal claim interpretation, and thusly, such an interpretation does not support a finding of obviousness. For the reasons discussed above, since Bi taken in view of Majos fails to teach or suggest the system in amended claim 1, Bi taken in view of Majos does not make amended claim 1 obvious and amended claim 1 is patentable.

Claim 25 has been amended to substantially incorporate the subject matter recited in claim 29. For reasons similar to those discussed above with respect to amended claim 1, the

cited art (including Bi and Majos) fails to teach or suggest the system of claim 25. Since, Bi taken in view of Majos fails to teach or suggest the system recited in claim 25, this combination does not make amended claim 25 obvious. Amended claim 25, as well as claim 26 depending therefrom, are patentable.

Claim 30 has been amended to substantially incorporate the subject matter of claim 36. Specifically, amended claim 30 recites controlling an oscillator to provide a signal at a frequency based on a comparison of a frequency value for a signal relative to a desired frequency. For the reasons stated above with respect to claim 1, Bi taken in view of Majos (which has been relied on for the rejection of claim 36) fails to teach or suggest the controlling recited in amended claim 30. Accordingly, Bi taken in view of Majos fails to teach or suggest the method recited in amended claim 30. Therefore, amended claim 30 is not made obvious by Bi taken in view of Majos, and amended claim 30 is patentable.

For the reasons stated above, the rejection of claims 1, 25, 26 and 30 should be withdrawn. Accordingly, reconsideration and allowance of claims 1, 25, 26 and 30 is respectfully requested.

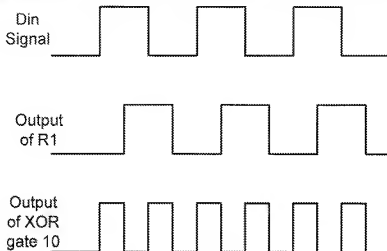
II. Rejection of Claim 15 under 35 U.S.C. 102(e)

Claim 15 has been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,701,445 to Majos ("Majos"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 15 has been amended to make explicit that which was believed to be implicit. Specifically, amended claim 15 recites that delay elements delay a sample signal by a respective known amount of time to provide a clock signal corresponding to a delayed version of the sample signal.

The Office Action contends that the output of R1 is provided to the clock input of the FFs through the XOR gate 10 and that R1 11 delays the sample signal to provide the appropriate clock pulses to the FFs 14 and 15 to clock the FFs through the XOR gate 10. Office Action, at page 13. Applicant agrees that it is the output of the XOR gate that is provided to clock FFs 14 and 15 and that the output of time-delay line 12 is provided to clock FFs 16 and 17. However, this approach, as taught in Majos, is in sharp contrast to what is recited in claim 15.

Significantly, in Majos, the output of the XOR gate 15 is not a delayed version of Din (or a delayed version of any other signal) consistent with what is recited in claim 15. Instead, in Majos the output of the XOR gate 15 is a waveform having a frequency and duty cycle that depends on the frequency of the data signal Din and on the amount of delay provided by R1. To illustrate this concept, Applicant's representative respectfully submits the following diagram:



Clearly, as illustrated in the diagram, the output of the XOR gate 16 disclosed in Majos is not a delayed version of the Din signal. It should be appreciated that different amounts of delay by R1 will result in the output of the XOR gate having different pulse widths depending on the amount of delay provided by R1. Stated differently, the time-delay R1 defines the width of the sampling pulses at the output of the XOR gate 10. Majos at Col. 5, lines 23-25. Accordingly, neither the XOR gate 10 nor the second delay line 12 disclosed in Majos provide delayed versions of a sample signal because the output of the XOR gate 10 disclosed in Majos is not a delayed version of the Din signal. Since Majos does not disclose each and every element of amended claim 15, Majos does not anticipate amended claim 15. Accordingly, allowance of amended claim 15 is respectfully requested.

III. Rejection of Claims 2-9, 11, 27, 28, 31-35 under 35 U.S.C. 103(a)

Claims 2-9, 11, 27, 28, 31-35 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Bi, in view of U.S. Patent No. 6,326,826 to Lee et al. ("Lee"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claims 2-9, 11, 27, 28 and 31-35 depend from claims 1, 25 and 30. The addition of Lee does not make up for the aforementioned deficiencies of Bi with respect to claims 1, 25 and 30. Accordingly, Bi taken in view of Lee fails to make claims 2-9, 11, 27, 28 and 31-35 obvious, and claims 2-9, 11, 27, 28 and 31-35 are patentable. Thus, the rejection of claims 2-9, 11, 27, 28 and 31-35 should be withdrawn.

IV. Rejection of Claims 10 and 29 under 35 U.S.C. 103(a)

Claims 10 and 29 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Bi in view of Lee and in further view of Majos. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 10 depends from claims 8, 7, 5, 2 and 1. The further addition of Majos does not make up for the aforementioned deficiencies of Bi taken in view of Lee with respect to claims 8, 7, 5 and 2, from which claim 10 depends. Additionally, Bi taken in view of Lee and in further view of Majos fails to teach or suggest that an input signal is provided directly to an input of each of the storage elements such that the storage elements provide output samples based on delayed activation by each given clock edge, as recited in claim 10. In rejecting claim 10, the Office Action contends that in Majos, input H is directly connected to a plurality of storage elements (See Office Action, Pages 9 and 13). Applicant's representative respectfully submits that even if what the Office Action contends is true, Bi taken in view of Lee and in further view of Majos still does not make claim 10 obvious.

Claim 8 from which claim 10 depends recites that the delay elements are connected in series so that the amount of delay for a given clock edge corresponds to an aggregate amount of delay according to the number of delay elements in the path from the oscillator to the storage element activated by the given clock edge. In sharp contrast to this, the approach disclosed in Majos fails to include delay elements in a path from the oscillator to the storage elements, but instead Majos teaches that the delay element R1, dt and r2 are in a path to delay the digital incoming data signal Din - not the signal from the oscillator.

In the Response to Arguments section of the Office Action (page 13, last paragraph), the Examiner contends that FFs 14 and 15 comprise one storage element and 16 and 17 comprise another storage element to support the contention that signal H is provided directly to each of the

storage elements. This proposition is contrary to the explicit teachings of Majos in which each of the FFs provides a respective different output Q1, Q2, Q3 and Q4 of the sampling circuit 1. That is, Majos does not include 2 storage elements, but instead discloses four storage elements 14, 15, 16 and 17, each of which stores a corresponding one of the outputs Q1, Q2, Q3 and Q4. Thus, the Examiner's characterization of what constitutes a storage element appears contrary to Majos such that there would be no basis to combine the teachings of Bi, Majos and Lee to provide a system corresponding to the system of claim 1. By ignoring what is expressly taught in Majos to support its obviousness rejection reveals improper hindsight. For these reasons, Bi taken in view of Lee and in further view of Majos does not make claim 10 obvious, and claim 10 is patentable.

Claim 29 has been substantially incorporated into the subject matter of claim 25, and claim 29 has been canceled. Claim 29 is patentable for reasons similar to those as discussed above with respect to claim 1.

For the reasons stated above, the rejection of claims 10 and 29 should be withdrawn. Accordingly, reconsideration and allowance of claims 10 and 29 is respectfully requested.

V. Rejection of Claims 12, 13, 36 and 37 under 35 U.S.C. 103(a)

Claims 12, 13, 36 and 37 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Bi in view of Majos. Withdrawal of this rejection is respectfully requested for at least the following reasons.

The subject matter of claims 12 and 36 has been substantially incorporated into amended claims 1 and 30, respectively. Accordingly, claims 12 and 36 have been canceled.

Claims 13 and 37 depend from amended claims 1 and 30 and are patentable for at least the same reasons as amended claims 1 and 30, and for the specific elements recited therein. Moreover, claims 13 and 37 have been amended to maintain consistency with the amendments to claims 1 and 30. Accordingly, withdrawal of the rejection of claims 13 and 37 is respectfully requested.

VI. Rejection of Claim 14 under 35 U.S.C. 103(a)

Claim 14 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Bi. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 14 depends from amended claim 1. Claim 14 is patentable for at least the same reasons stated above with respect to amended claim 1, and for the specific elements recited therein. Accordingly, claim 14 is patentable. Therefore, the rejection of claim 14 should be withdrawn.

VII. Rejection of Claims 18 and 21-24 under 35 U.S.C. 103(a)

Claims 18 and 21-24 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Majos in view of Lee. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claims 18 and 21-24 depend from amended claim 15. The addition of Lee does not make up for the aforementioned deficiencies of Majos with respect to amended claim 15. Accordingly, claims 18 and 21-24 are patentable. Thus, Applicant's representative respectfully requests that the rejection of claims 18 and 21-24 be withdrawn.

VIII. Rejection of Claims 20 and 38 under 35 U.S.C. 103(a)

Claims 20 and 38 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Majos. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claims 20 and 38 depend from amended claim 15. Thus, claims 20 and 38 are patentable over Majos for at least the same reasons stated above with respect to amended claim 15, and for the specific elements recited therein.

Additionally, claim 38 recites that the frequency value is expressed in units of an inverse of a period of an input signal. In rejecting claim 38, the Office Action admits that H^+ and H^- are not expressed in units of an inverse period, but contends that the system disclosed in Majos provides a frequency H_{out} which is in units of an inverse period of an input signal (See Office Action, Page 12). Applicant's representative respectfully submits that the Office Action has misinterpreted claim 38 and Majos. Specifically, H_{out} , as disclosed in Majos, is an outgoing recovered clock signal provided by a phase comparator 2 (See Majos, Col. 4, Lines 45-46; Col.

6, lines 15-18). In particular, the phase comparator 2 chooses as the clock signal which is more in phase with the data signal Din, either the signal H or its complement. See Majos, Col. 6, lines 19-25. Since Hout, as disclosed in Majos, is a clock signal -, not a frequency value - Hout, as disclosed in Majos, cannot correspond to the frequency value recited in claim 38, which frequency value is expressed in units of an inverse of a period of an input signal.

In the Office Action, it is argued that the frequency value of a recovered signal (e.g., Hout, as disclosed in Majos) can be easily determined. To support this argument, the Office Action bases its reasoning that the frequency of a clock signal (e.g., Din) is typically known. Applicant's representative respectfully submits that the Office Action's reasoning clearly illustrates a deficiency of the system taught in Majos, which deficiency is not present in the methodology recited in claim 38. In claim 38, a frequency value is expressed in units of an inverse of a period of an input signal. There is no requirement in claim 38 (either expressed or implied) that the frequency value (e.g., the inverse of a period) of the input signal is known. Therefore, Majos does not make claim 38 obvious since Majos does not teach or suggest that the frequency of Hout is expressed in units of an inverse of a period of an input signal, in contrast to the frequency value recited in claim 38.

For the reasons stated above, the rejection of claims 20 and 38 should be withdrawn. Accordingly, Applicant's representative respectfully requests reconsideration and allowance of claims 20 and 38.

XI. CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 106.

No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 08-2025.

I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office via electronic filing on October 26, 2007.

Respectfully submitted,

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